

APPLICABILITY OF THE EIS SYSTEM
TO UNIVERSITY RESEARCH PROJECTS

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Revised December 1976

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Letter of transmittal, November 1976

November 5, 1976

MEMORANDUM

TO: Howard McKaughan
Director of Research

Application of the EIS System to
University Research Projects

This report was prepared by the Director of the Environmental Center to further the efforts of a Task Force that was appointed by the Policy Committee of the Center to investigate how the Environmental Impact Statement (EIS) system might best be applied to the research programs of the University.

We believe that it is essential that the University comply with legal requirements of the EIS system, and important both that the University serve as a model in applying the system to its research programs, and that the research programs are encumbered as little as possible in the application.

As submitted, the report reflects the results of reviews of early drafts by the Task Force and by you. The comments and suggestions you made are much appreciated. We believe that the report presents suggestions and recommendations that will be useful in beginning the development of an appropriate system for applying the EIS system to University research programs, and recommend its transmittal through the Manoa Chancellor to the University President.

1975-1976 EIS Task Force, Environmental Center Policy Committee

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cc: Policy Committee

Revisions, December 1976

In this revision certain editorial corrections have been made as the result of reviews by the staffs of the Environmental Quality Commission and the Office of Environmental Quality Control. The reviews of those agency staffs are much appreciated.

D.C.C.

APPLICABILITY OF THE EIS SYSTEM TO UNIVERSITY RESEARCH PROJECTS

SUMMARY

A. Introduction

This report relates to Environmental Impact Statement (EIS) system requirements as they relate to the research programs of the University of Hawaii.

An EIS is a document that discloses the environmental effects of an action so that these effects may be taken into account in deciding whether or not the action should be undertaken or permitted. Only a few University research projects are subject to Federal EIS requirements, but practically all University research is covered by the State EIS law. Hence in this report attention is focussed on the State EIS system, which calls in many cases for consideration falling short of actual EIS preparation.

It is assumed that the University, as the principal institution of higher education in the State, should serve as a model to the community in its compliance with the EIS system requirements and their intent.

However, in its application to the research programs of the University, the EIS system should not unduly hamper these programs.

The report suggests both criteria for identifying the larger fraction of research projects and programs that need receive no further consideration in the EIS system and means for developing continuing process for assuring that the remaining smaller fraction of the projects and programs will receive appropriate levels of consideration in the EIS system.

B. Multiple-screening system

The State provision, detailed in the regulations of the Environmental Quality Commission (EQC), include a multiple-screening system. Actions covered in general are first sorted into those that may be exempt by type from further consideration and those that will require individual assessment. Second, actions that require assessment are sorted into those that will not and those that will require formal EIS's.

The primary sorting criterion in both cases is the significance of the effects that may result from the actions. EQC guidelines as to significance include curtailment of the range of beneficial uses of the environment, including irrevocable resource losses and substantial effects on rare species; substantial economic or sociological effects, including secondary effects; substantial environmental degradation, including air, water, and noise pollution; and cumulative effects or effects in an especially sensitive area.

For an agency action to be exempt from environmental assessment, it must be included in a list of types of action falling within one of several general classes of action identified as exempt by the EQC. The agency exemption lists are subject to EQC's approval.

Agencies must make environmental assessment of non-exempt actions and on the basis of such exemptions determine whether EIS's will not be required (Negative Declarations) or will be required (Preparation Notices). The determinations must be reported to and published by the EQC.

EIS's, as required, must be prepared by the agencies in consultation with interested public agencies and must be available for public view. Comments received in the review process must be responded to. State agency EIS's, including those prepared by the University, are subject to acceptance by the Governor.

Exemption, the issuance of a Negative Declaration, or the completion and acceptance of an EIS is required before an agency action may proceed.

C. Applicability to University research

The entire University research program, or practically all of it, falls within the category of State agency actions covered by the State EIS law. However, basic research (with certain exceptions) has been identified by the EQC as a class of action exempt from EIS assessment. The University has prepared an initial list of exempt types of actions, based on this and other EQC exemption classes.

As appropriately revised, the University list may provide for the exemption from assessment of a very large part of the University program.

A flow chart for determining what University research programs are appropriate for exemption and what programs and projects are appropriately subject to Negative Declarations or assessments, and for preparing and having reviewed and accepted the EIS's on the remaining projects and programs is presented in Figure 2.

On the basis of general considerations of the relationships between types of University research and their potential environmental impacts, University research has been classified into programs that may be exempt by type from further consideration, may be subject to individual program or project assessment. The results are presented in Table 2.

The secondary environmental effects of research are likely, in general, to be more important than the primary effects. However, considerations of the uncertainty of secondary effects and of inclusions and exclusions from environmental assessment requirements of the subsequent actions which are necessary to these effects, lead to the conclusion that secondary impacts need not be taken into account in determining assessment needs unless they will result from "real world" actions, other than general plan adoptions or revisions, that will not be subject to subsequent assessment.

D. Recommendation

It is recommended that this report be utilized in the development of a system for considering the environmental impacts of University research programs and projects in accordance with State requirements. The Center is prepared with further suggestions as to means for developing the needed system.

I. INTRODUCTION

A. Purpose of report

Both State and Federal law require that consideration of the environmental impacts of certain general categories of actions before the actions are undertaken. The Policy Committee of the Environmental Center has considered it desirable to review these requirements as they relate to the research programs of the University of Hawaii, and established a task force for this purpose. This report has been prepared for submission to the task force and, if they approve, for forwarding to the University administration for its consideration.

The legal requirements apply to individual actions (programs or projects). For some kinds of actions they require the preparation of Environmental Impact Statements (EIS), and the prescribed systems for considering environmental impacts are often referred to as EIS system, although the State system calls in many cases for considerations that fall short of actual EIS preparation.

An EIS is a document that discloses the environmental effects of an action. Most actions are undertaken for the sake of the benefits that will be derived from them. However, many actions that have had beneficial effects have resulted also in detrimental effects that could have been determined in advance but were unforeseen by those who undertook the actions, those whose permission was necessary to the undertaking, or those who would be detrimentally affected. The purpose of an EIS system is to require the advance identification, evaluation, and disclosure of those environmental effects of actions that will be of significance in determining whether the actions should or should not be undertaken or permitted.

Significant concerns with environmental impacts extend to only a part of the overall research program, and EIS's should be required for only a small fraction of the research projects of the University. The principal concerns in this report are with the criteria and processes by which research programs and projects may be sorted with respect to the appropriate level of consideration of environmental effects, and not with the topics to be addressed in environmental impact documents or the level of detail to which analysis is needed.

B. Assumptions, form, and extent

The form and extent of this report have been greatly influenced by several assumptions whose recognition is appropriate in its introduction:

1. Applicability of legal provisions

It is of course assumed that the University must comply with legal requirements for the consideration of the environmental impacts of its research program. In addition, it is assumed that the applicable laws and regulations not only indicate what is required of the University but may suggest principles that the University may find helpful in complying with the

requirements. Hence, in Chapter II, which summarizes the legal provisions, particular attention is given to the regulations of the State Environmental Quality Commission (EQC), which not only contain the most comprehensive requirements applicable to University research but describe a multiple screening process by which actions in general are to be sorted out into those that may be exempted from further formal environmental consideration, those that require a simple kind of environmental assessment, and those that require formal EIS.

2. Significance of impacts

The most important determinant in deciding which projects should be subject to environmental assessment, which should be subject to EIS preparation, and to what extent the EIS analysis should be carried, is the significance of the environmental effects that will result from the projects. It is assumed that the EQC criteria for determining the significance of the environmental effects of actions in general are applicable to determining the significance of effects of research projects, and these criteria are included in the discussion of legal provisions in Chapter II.

3. University provisions

In Chapter II attention is also directed to a list of types of action proposed by the University for exemption from environmental assessment. The list was prepared pursuant to EQC requirement and is subject to EQC approval. Nevertheless, it is assumed that this list may be revised if revision would increase the efficiency and effectiveness of the University use of the EIS system as it relates to research programs.

4. Association between research and impacts

It is assumed that there are certain associations between research projects and the potential environmental impacts of such projects whose recognition will aid in determining how the University may best comply with the spirit as well as the letter of laws and regulations regarding the advance consideration of these impacts. In Chapter III, these associations are examined, and from them are drawn some general conclusions as to the different levels of impact consideration appropriate to various kinds of research.

5. Expediency

Considerable experience indicates that challenges to the undertaking of actions without previous compliance with EIS system requirements may result in very serious delays and associated additional costs. At least one University research project has been held up for a time by such a challenge. It is therefore assumed, on the one hand, that the system adopted by the University for meeting EIS system requirements should be so designed as to minimize the chance that any project subject to the requirements will be undertaken until the requirements are complied with. On the other hand, it is assumed that the research program of the University should not be encumbered with pointless bureaucratic procedures. Hence use is made of the screening process prescribed by EQC to reduce, to the minimum compatible with the letter and intent of the legal provisions, the extent of environmental considerations needed for research projects.

6. Screening process

It is assumed that the screening process prescribed by EQC may be expanded, and an expansion that will permit more extensive consideration of environmental impacts by general types and programs of research, rather than by individual projects, is discussed in Chapter IV.

7. Screening process use

It is assumed that the relations found between kinds of research and levels of appropriate impact consideration may effectively be used in the screening process to identify types and programs of research for which no further consideration of environmental impacts may be terminated at various points.

8. Review of University research

It is assumed that the system actually to be used in the University for assuring that the research programs meet EIS system requirements must be developed through systematic review of the programs themselves, which is beyond the scope of this report.

9. Placement of responsibilities

It is assumed that responsibilities in the EIS system related to University research should be placed in such a way as not to be biased by the special interest of project personnel. It is also assumed that the EIS system related to research will be important enough, and sufficiently distinctive from the EIS system related to other University actions, to warrant partly separate administration.

10. Importance

Finally, it is assumed that the University, as the principal institution of higher education in the State, should serve as a model to the community in the exercise of intelligent concern with the environmental impacts of its actions, particularly as these affect the present and future welfare of the community as a whole, now and in the future.

11. Comment

If this report contributes toward the development of a system that will result in a model of EIS system compliance with respect to University research programs, it will have served its purpose.

C. Acknowledgements and apologia

1. Acknowledgements

Jacquelin Miller, Associate Specialist, who is deeply engaged in the Environmental Center's EIS system review activities kindly reviewed an initial

draft of this report and made many very helpful suggestions.

The suggestions of the Environmental Center EIS subcommittee and of Howard McKaughan, Director of Research, who reviewed subsequent drafts are gratefully acknowledged.

The labor of typing several successive drafts has fallen on both Winifred Miura, the Center's Secretary, and on Dorothy Rosario, her temporary replacement.

2. Apologia

It is both anticipated and hoped that the manual of the University research EIS system which is recommended will be a very brief document as compared with this report. As may be apparent to its readers, the concepts and recommendations in the report were developed very largely through its writing and rewriting. Most of the persons concerned will need to have access to only the summary, but it seemed desirable to reflect the development and present the rationale for the conclusions in full in the report itself.

II. LEGAL PROVISIONS

A. Authorities

The primary authority in Federal law for requiring that environmental impacts be investigated before actions are undertaken is the National Environmental Protection Act (NEPA) (42 USC 4341, as amended by PL's 94-52 and 94-83).

The primary pertinent authority in State law is the chapter of Hawaii Revised Statutes on "Environmental Quality Commission and Environmental Impact Statements (HRS Chapt 343; Act 246, 1974). The provisions are spelled out in greatest detail in the Regulations of the Environmental Quality Commission (EQC). These regulations became effective June 2, 1975.

Because the applicability of the Federal requirements is restricted to "actions significantly affecting the quality of the human environment," and the State provisions relate to actions that may have "a significant effect on the environment," and the requirements in both cases relate to the preparation of Environmental Impact Statements (EIS's), definitions of an EIS, significant effects, and environment, and criteria for judging significance warrant review prior to discussion of the procedural requirements.

The NEPA provisions are brief and rather general. For details as to the extent of their applicability one must turn to a large number of ensuing court decisions, and for detail as to procedures to the regulations of a considerable number of agencies. Pertinent definitions, procedures, and criteria are more centrally provided in the applicable State law and regulations. Far more University projects will be subject to the State requirements than the Federal requirements, and those that are subject to the Federal requirements will also generally be subject to the State requirements. The State provisions incorporate means for compliance with the Federal provisions. Hence the discussion of definitions, criteria, and procedures will be based primarily on State provisions.

B. Federal provisions

The NEPA EIS requirement (Sec. 102) is as follows: "All agencies of the Federal Governments shall: ... (C) include in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on -- (1) the environmental impact of the proposed action, [and (ii-v) unavoidable adverse effects, alternatives, short-term and long-term environmental issues, and irreversible commitments]."

Although the fundamental responsibility for a Federal EIS rests with a Federal official, the law provides that an EIS on a State action supported by a Federal grant may be prepared initially by a State official or agency (Subsec. 102D). Under this provision, the University has been required to prepare at least one EIS on a research project supported by a Federal grant that would, it was considered, have a significant environmental impact.

In the preparation of a Federal EIS, concerned Federal agencies must be consulted, and the draft EIS must be submitted for review to such Federal agencies, and those State and local agencies that have responsibilities with respect to environmental standards. The final EIS must be submitted to the President and the Council on Environmental Quality (CEQ) which was created by NEPA (Title II), and also made available to the public.

C. State definitions

1. EQC provisions

Definitions pertinent to the EIS system are presented in greatest detail in the EQC regulations [1:4]. Those most pertinent to the subject of this report are quoted below:

- b. Action means any program or project to be initiated by any agency or applicant.
- c. Agency means any department, office, board or commission of the State or County government which is a part of the executive branch of that government.
- d. Agency Action is an action proposed by an agency which will use State or County lands or funds.
- h. Assessment is an evaluation by an agency of a proposed action to determine whether an Environmental Impact Statement is required.
- k. Environment means man's surroundings, inclusive of all of the physical, economic, and social conditions which exist within the area which will be affected by a proposed action including land, human and animal communities, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance.
- l. Environmental Impacts means an effect of any kind, whether immediate or delayed, on any component or the whole of the environment.
- m. Environmental Impact Statement or Statement or EIS means an informational document prepared in compliance with Chapter 343, Hawaii Revised Statutes, applicable rules, and these Regulations, and which discloses: the environmental effects of a proposed action, the effects of a proposed action on the economic and social welfare of the community and State, the effects of the economic

activities arising out of the proposed action, the measures proposed to minimize adverse effects, and the alternatives to the action and their environmental effects.

- n. Environmental Impact Statement Preparation Notice or EIS Preparation Notice means a document informing the Commission of an agency determination, after an assessment, that the preparation of an Environmental Impact Statement is required.
- o. Exempt Classes of Action are exceptions from the requirements of Chapter 343; Hawaii Revised Statutes for a class of actions, based on a determination that the class of actions will probably have a minimal or no significant effect on the environment.
- p. Negative Declaration means a determination by an agency that a given action does not have a significant effect on the environment and therefore does not require the preparation of an EIS.
- s. Significant Effect means the sum of those effects that affect the quality of the environment, including irrevocable commitment of a natural resource, curtailment of the range of beneficial uses of the environment, conflicts with the State's environmental policies or long-term environmental goals and guidelines as established by Chapter 342 and 344, Hawaii Revised Statutes, or any revisions thereof, or amendments thereto, or adverse effects upon the economic or social welfare.

2. Commentary

Although the EQC definition of environment does not indicate the restriction, the EIS system is concerned primarily, if not exclusively, with the outdoor environment. Indoor environmental problems, such as those that may be presented in a laboratory, are likely to be covered by industrial health and safety regulations, but not by EIS system regulations.

The EQC definition of significant effect indicates that the concern extends to a great diversity of effects, including effects on the social as well as natural environment. It does not in itself indicate the restriction to those effects that are significant. For guidance as to what are considered significant, one must turn to the EQC discussion of significance criteria.

D. State significance criteria

1. EQC provision

The EQC Regulations provide a discussion of significance criteria and procedures (Reg. 1:31) whose introduction and subsection (a) on criteria are quoted in their entirety below:

In considering the significance of potential environmental effects, agencies shall consider the sum of those effects that affect the quality of the environment, and shall evaluate the overall and cumulative effects of the action.

A "significant effect" may vary with individual setting and circumstances of particular actions. Generally, however, any action which may have a major effect on the quality of the environment, or affect the economic or social welfare of an area, or would possibly be contrary to the State's environmental policies or long-term environmental goals and guidelines as expressed in Chapters 342 and 344, Hawaii Revised Statutes, and any revisions thereof and amendments thereto, would likely result in a "significant effect."

- a. In determining whether an action may have a significant effect on the environment, the agency shall consider every phase of a proposed action, and expect consequence, either primary or secondary, or the cumulative as well as the short- or long-term effect of the action. All agencies should bear in mind that in most instances, the following factors of an action, although not limited to same, may constitute a significant effect on the environment when the action:
 1. involves an irrevocable commitment to loss or destruction of any natural or cultural resource;
 2. curtails the range of beneficial uses of the environment;
 3. conflicts with the State's long-term environmental policies or goals and guidelines as expressed in Chapter 342 and 344, Hawaii Revised Statutes, and any revisions thereof and amendments thereto, court decisions or Executive Orders;

4. substantially affects the economic or social welfare of the community or State;
5. substantially affects economic or sociological activities;
6. involves substantial secondary impacts, such as population changes or effects on public facilities;
7. involves a substantial degradation of environmental quality;
8. is individually limited but cumulatively has considerable effect upon the environment or involves a commitment for larger actions;
9. substantially affects a rare, threatened or endangered species of animal or plant, or habitat;
10. detrimentally affects air or water quality or ambient noise levels; or
11. affects an environmentally sensitive area such as a flood plain, tsunami zone, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters.

2. Commentary

The following comments may be made on the pertinence of the listed criteria to University research projects.

(1) A research project will rarely, in itself, involve an irrevocable commitment to destruction or significant loss of a resource. However, see (6), (9), and (11).

(2) A research project will rarely curtail the range of beneficial uses of an environment. However, see (6).

(3) HRS Chapter 342, although titled "Environmental Quality" deals essentially with air, water, noise and solid-waste pollution, and the Department of Health powers to regulate such pollution. Research projects must comply with any applicable DOH regulations. HRS Chapter 344, the State Environmental Policy Law, is concerned with conservation of natural resources and the enhancement of the quality of life. It contains general guidelines as to population, resource conservation, recreation, economic development, transportation, energy, education and culture, and citizen participation, the most pertinent of which are covered more directly in the EIS law.

(4) and (5) A research project will rarely have substantial direct effects on economic or social activities or welfare.

(6) For reasons discussed in Chapter II, secondary effects should be taken into account in determining environmental assessment needs only in the case of some applied research projects, and then only to the extent that institutional mechanisms for post-research analysis of the environmental impacts of actual developments are inadequate.

(7) A research project will rarely result in substantial degradation of environmental quality. However, see (9) and (11).

(8) Successive research projects may in some cases result in greater environmentally detrimental impacts than single projects. However, commitments are rarely made to succeeding projects at the time of an initial project, and impacts of succeeding projects are generally better estimated when the results have been obtained from initial projects. Hence, unless the primary impacts of an initial project will be significant, EIS requirements will generally be met best by a plan for staged analyses of impacts accompanying successive research proposals.

(9) Collections and even observations of rare, threatened, or endangered species or habitats must be of concern in some research, even laboratory research.

(10) Air or water pollution or excessive noise must be of concern in some research, even laboratory research.

(11) Effects on sensitive environments must be of concern, especially in the case of some demonstration projects.

It should not be assumed that the EQC's list of significant criteria is necessarily complete. Review of University research may possibly reveal environmental impacts that do not clearly fall within any of the listed criteria but may nevertheless be significant.

E. State procedures

1. General

The State procedural prescriptions in the EIS law and the EQC regulations may be described as defining a multiple screening process. In successive stages: i) categories of action that are subject to the EQC regulations are identified; ii) from these categories, classes that are exempted from individual assessment are identified; iii) the remainder are sorted between those that will require formal EIS's from those that will not; iv) the acceptability of the EIS's when prepared for the former will be determined; v) the decisions at stages iii) and iv) may be appealed.

The law and the regulations provide that for every action that is in a category covered, that is not exempt, and for which a determination is made

on the basis of assessment that an EIS is necessary, an EIS must be accepted before the action may be undertaken.

The EIS system screening process is shown in flow chart form in Figure 1. The provisions for this screening process are discussed as they apply to the University research program below.

2. Action categories of concern

Under the definition of an agency, the University is an agency of the State. The agency actions subject to consideration under the EIS law are those in which State or County lands or funds will be used (Reg. 1.12a). The use of State and County funds "shall include any form of funding assistance flowing from the State or a County" (Reg. 1.126). Excluded, however, from the category of agency actions subject to consideration are "feasibility or planning studies for possible future programs which the agency has not approved, adopted, or funded. Nevertheless, if an agency is studying the feasibility of a proposal, it shall consider environmental factors and available alternatives and disclose any such considerations in any subsequent Statement."

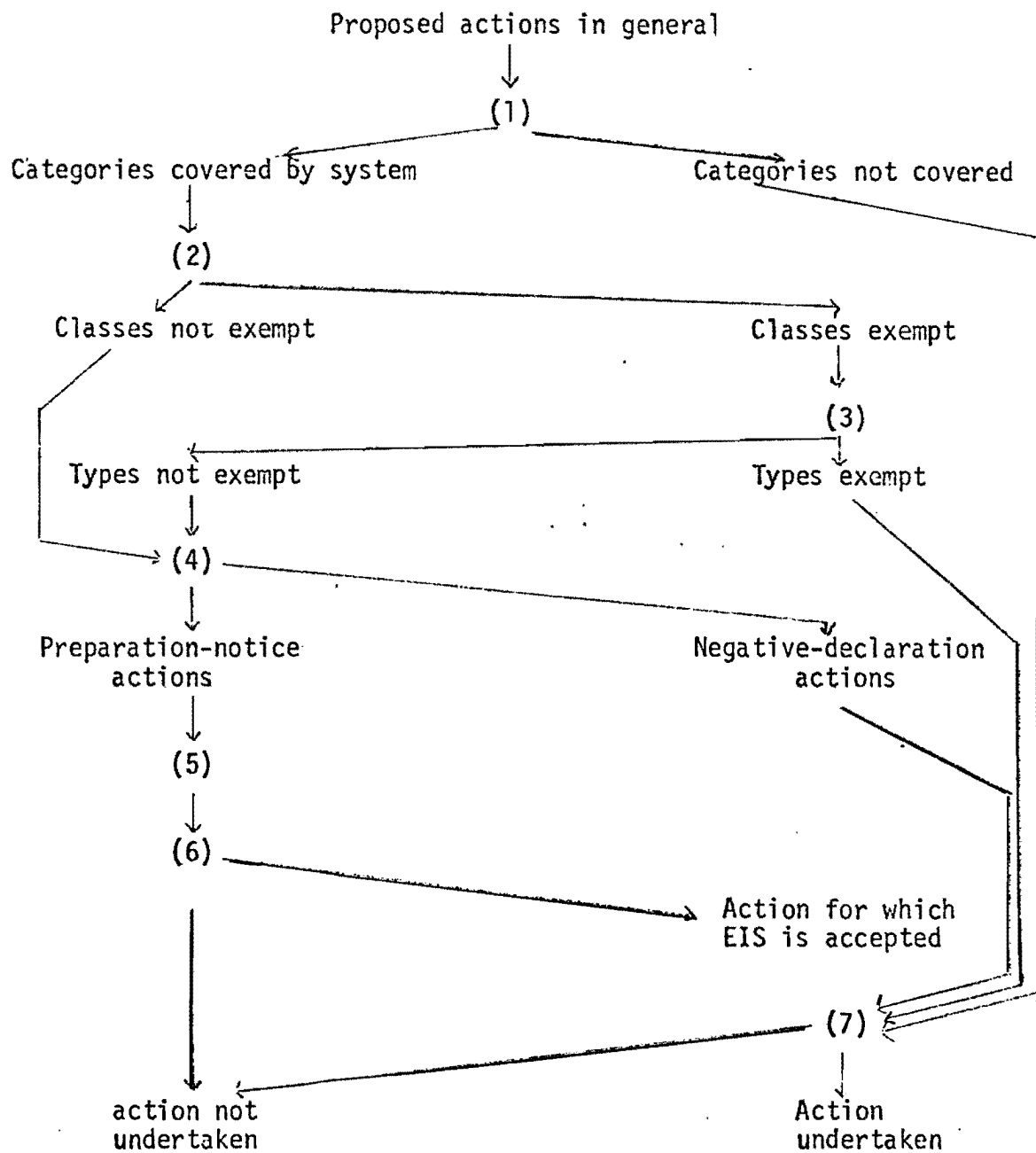
Few, if any, University research projects do not depend on the services of faculty supported by State funds or the use of State facilities. Projects supported by Federal funds are in general similarly dependent in part on State support. Hence, the State EIS law applies to the entire University research other than its feasibility and planning studies, with the possible exception of research projects undertaken out-of-state and supported entirely by Federal, foreign, or private funds. Most of the projects possibly excepted involve the use of Federal funds, and all of them are subject to the overall University administration, which is supported with State funds. It is therefore assumed that all University research projects must be subjected to environmental assessment unless they fall within a specifically exempt type.

The categories of private actions covered by the State law are of only indirect concern here (Regs. 1:22a). The identification of four geographic categories indicates special concerns that may perhaps be interpreted as implying priorities that may relate also to government actions, including University research. The private actions covered are those to be taken in the Conservation District; in the shoreline setback area; in a designated historic site; or within the Waikiki-Diamond Head area of Oahu. The fifth category is of interest here only as it contains an exclusion that may bear on needs to consider the secondary impacts of University research, a matter that will be discussed later. The category included is action that require amendments to County General Plans. Excluded, however, are the General Plans themselves, and those amendments thereto that are proposed by the Counties.

3. Exempt classes

The EQC regulations recognize 10 classes of action that may be exempt from environmental consideration, subject to some qualifications, if included within lists of exempt types of action to be prepared by agencies subject to EQC approval (Reg. 1:33a). With regard to University research projects, the following exemption class is the most important:

Figure 1. Flow Chart for Major EIS-System Decisions



<u>Notes</u>	<u>Decisions</u>	<u>Authorities or institutions responsible</u>
(1)	Basic decision on system coverage	HRS Chapt. 343
(2)	Exemption class decisions	EQC Regs.
(3)	Exemption type decisions	Agency
(4)	Assessment	Agency
(5)	EIS preparation, provision for review & response	Agency
(6)	EIS acceptance decision	Governor
(7)	Decision on action	Agency

"5. Basic data collection, research, experimental management, and resource evaluation activities which do not result in a serious or major disturbance to an environmental resource."

Other classes exempted include such actions as: 1. operations, maintenance and repairs; 2. replacement of structures and facilities; 3. and 7. construction of minor structures; 4. minor alterations of land, water, or vegetation; 6. administrative activities; 8. interior alterations; 9. demolition other than in a historic site; and 10. zoning variances.

No exemption is applicable if the cumulative effect of successive actions will be significant or if an action is to be taken in a particularly sensitive environment (Reg. 1:33b). Hence, in general, the key to determining the appropriateness of exemption of any action covered by the law is the significance of its environmental effects.

4. Assessment

Any agency action that is of a category covered by the EIS law and that is not exempt is subject to the following provisions (Reg. 1:30).

- a. For agency actions, agencies are to assess proposed actions at the earliest practicable time in order to assure thoughtful and deliberate evaluation in determining the significance of various environmental impacts.

Subsequent to the conception of an agency-proposed action, but prior to the adoption of a plan of study, the agency should: (1) identify potential impacts; (2) evaluate the potential significance of each impact; (3) provide for detailed study of major impacts; and (4) determine the need for a statement. In the assessment process, the agency should consult with other agencies having jurisdiction or expertise as well as citizen groups and individuals.

- c. ...the agency shall document its assessment of a proposed action for future reference. The actual determination shall be published, but if the agency desires, it may also publish the contents of its environmental assessment and solicit comments from other agencies and the general public.

On the basis of the assessment, the agency is to issue an EIS Preparation Notice if the assessment discloses significant impacts (Reg. 1:31c1) or a Negative Declaration if no significant impacts are identified (Reg. 1:31c2). In either case, the notice of determination must be filed with the EQC, which will inform the public by way of its periodic bulletin (Reg. 1:3).

Under these provisions, the University is responsible for assessing those of its research projects that are not exempt, for making the determination with respect to EIS preparation, and for notifying EQC.

5. EIS preparation, review, and acceptance

If the preparation of an EIS is required, the agency (the University in the case of one of its research projects) must consult with other concerned agencies (Reg. 1:41), and with any persons or groups who have indicated on the basis of the Bulletin publication, that they wish to be consulted (Reg. 1:31d). The University must supply such persons or groups with a copy of the preparation notice, must make written request for their comments (Reg. 1:41a), must allow 30 days for their response (Reg. 1:41b) and must reply in writing to all responses, before filing the EIS (Reg. 1:41c). The purpose of this consultation process is to assure as nearly as possible that the EIS will be adequate before it is filed and open to formal review.

The contents of an EIS have been prescribed by the EQC (Reg. 1:42). In form, however, the EIS should be prepared so as to disclose most effectually the impacts (Reg. 1:43).

The completed EIS is to be filed with the EQC, which will publish notice of its availability for public review in its Bulletin, and also with the Governor's authorized representative (Reg. 1:72a), the Director of the Office of Environmental Quality Control (OEQC). Review comments may be provided up to 30 days after the Bulletin publication date. Every review comment must be responded to by the University before 14 days have lapsed after the end of the review period. The EIS, with the responses to critical comments, is then subject to acceptance by the Governor, whose decision will be announce in the EQC Bulletin.

Ordinarily, the acceptance of an EIS on a project clears the way, so far as the EIS system is concerned, for the entire project. However, if changes occur subsequent to the EIS acceptance that make its conclusions no longer valid, a Supplemental Statement must be prepared (Reg. 2:00) under specified provisions (Reg. 2:10 and 2:11).

6. Appeals

Negative Determinations, based on assessments of projects, and acceptances of EIS's may be subject to court appeals under certain conditions (Reg. 1:81).

F. University exemptions

1. University proposal

The EQC regulations provide that each agency shall develop a list of specific types of actions that fall within the general classes established as exempt by the EQC itself. Such a list must be submitted to the EQC for approval (Reg. 1:33d). In accordance with this provision, the University has prepared a list which is awaiting EQC approval. As most recently revised, the list

includes the following type of actions that fall within the EQC exempt class of research and related activities:

5. Basic data collection, research, experimental management, and resource evaluation activities which do not result in a serious or major disturbance to an environmental resource;
 - a. gathering of soil, air, water, plant, animal, fish, mineral, and other specimens for research, experimental or instructional purposes. This item does not apply to: the gathering of threatened or endangered plant, animal, or fish species; the importation of plant, animal or fish species; or to actions that detrimentally affect air or water quality and ambient noise level.
 - b. historic, geographic, or demographic surveys.
 - c. topographic, land use, soils and drainage surveys.
 - d. flora and fauna surveys.
 - e. environmental impact research.
 - f. horticultural, silvicultural and floracultural experiments within confined sites.
 - g. use of EPA and State Department of Agriculture approved pesticides and herbicides under the supervision of certified applicators for spot or test plot applications within specified areas.
 - h. storage of flammable and combustible liquids.
 - i. storage of radioactive materials.
 - j. archaeological surveys supervised by qualified archaeologists.

The following additional exemption applying specifically to research appears in class 4, "Minor alterations in the conditions of land, water or vegetation:

- "f. experimental and research projects with native flora and fauna, within the Conservation District with the consent of the DLNR, Division of Forestry and the respective County agencies, where applicable."

Other types of action that may be pertinent to research are listed as follows:

(1) Operations, repairs, and maintenance: Buildings; research equipment; roads, walkways, etc.; workshops; service facilities; air conditioners and ventilating equipment; automotive equipment; walls and fences; antennas, towers, and poles; use of approved pesticides and herbicides by certified applicators; holding pens, cages, ponds, tanks, and greenhouses; piers and landings; furnaces and kilns; compactors and incinerators.

(2) Replacement and reconstruction: Essentially same list as above. However, sea wall replacement is limited to Coconut Island; automotive equipment is not included; tents and temporary sheds and flammable feed storage are included.

(3) Construction of minor facilities: Air conditioners and ventilating systems, tents, workshops, compactors, and incinerators.

(4) Minor alterations of land, water, and vegetation: Planting of trees, plants, and sod; pruning; cultivation.

(6) Administrative activities: Research on University functions.

(7) Construction of accessory structures: Offices and laboratories for research involving negligible expansion or change of use, except on Mauna Kea, Haleakala, and other sensitive areas; pens, sheds, cages, tanks and ponds; air conditioners and ventilating equipment, service facility accessories, furnishings.

(8) Interior alterations: General.

(9) Demolition: Non-functional or uneconomic structures.

(10) Zoning variances: Storage of combustible material.

2. Commentary

The Environmental Center has reviewed and commented on the proposed University exemption list. Most of the comments are not pertinent to research activities. The Center's comments on class 5 were as follows:

The Environmental Center has undertaken to review the research programs of the University with respect to EIS requirements. From this review may come recommendations as to revisions of the proposed Class 5 list that will include as exemptions some kinds of research projects that would not be exempted in the present list, and will identify some exceptions (in addition to those already noted) to the kinds of projects that in general should be exempted. There will also probably be recommendations as to mechanisms to identify projects for which environmental impacts

should be considered. For the present we have only the following comments:

a. The significance of the impacts of collecting of natural specimens depends upon the relation between the magnitude of the sample collected and the magnitude of the population being sampled. This principle applies in the case of geologic and archaeological specimen collection as well as the case of biological specimen collection with respect to threatened or endangered species. However, for the present we have no suggestions as to change in wording.

b., c., d. We assume that by surveys is meant purely observational and not such manipulative activities as specimen collection.

f. The exemption with respect to horticultural and similar experiments should not apply to experiments within the Conservation District.

g. See comments on 1.s.

The Center's comments on Class 1, type s were as follows:

s. Exempted uses of pesticides under herbicides is wisely restricted to uses of duly approved materials by duly qualified applicators. It should be recognized, and it might be wise to specify that restriction with respect to official approval applies not only to approved materials but to uses as approved. A pesticide approved for use in one type of environment may have serious detrimental effects if used in another. The further restriction to uses on University property is noted. We recommend still a further restriction to exclude from exempt uses any outdoors in the Conservation District. With this further restriction, assessment would be required of the impacts of outdoor pesticide and herbicide uses at, for example, the Mauna Kea or Haleakala laboratories. The EQC is engaged in a review of the scale and nature of pesticide and herbicide uses appropriate for exemption, in connection with the proposals for exemption from other agencies. It would be well to consult with the EQC in the final definition of this type of action.

The Center's comments on the proposed exemption of operations, maintenance, and reconstruction of pens, cages, tanks, and ponds are also pertinent to research. The Center considered that the exemption should not apply to the confinement of species not originally confined if environmental hazard would result from the possible escape of the new species or its parasites.

III. ASSOCIATIONS BETWEEN RESEARCH AND IMPACTS

A. Introduction

In determining the extent to which the environmental effects of research programs and projects should be considered before undertaking the projects, it seems well to examine the associations between various kinds of research and their potential effects. The discussion of such associations in this chapter relates to the nature of the associations themselves, as well as to their relationships to the system for advance consideration of environmental effects. Two kinds of environmental impacts of research are distinguished, research is classified in relation to three dimensions, and the several varieties of association between research and impacts are discussed in relation to the extent to which the assessment of impacts is warranted for individual research projects.

B. Primary and secondary impacts

Among the impacts of an action, it is convenient to distinguish between the primary impacts, those which will result most directly from the action, and the secondary impacts, those which will result only indirectly.

In general, the direct effects, those that will be manifest promptly and in the immediate vicinity of the causative action, will be comparatively few in number. The indirect effects are likely to be ramifying and to extend over long periods of time and distance. They are also much more liable than the direct effects to be subject to other influences than the specific action of concern. Hence the secondary effects of an action are almost always more difficult to identify and analyze than the primary effects, particularly before the action is undertaken. For many actions, however, the secondary effects are by far the most important.

The attachment of greater importance to secondary than primary effects applies, at least potentially, to all research projects. Most research is undertaken for the purpose, or at least with the justification, of providing information which will be put to some use in subsequent actions whose scale will be considerably greater than the scale of the research projects. Experience has indicated that even information resulting incidentally from research may eventually be found useful. This is true even in the case of projects that are undertaken without any utilitarian purpose in mind or that fail to produce the utilitarian information that was initially sought.

In spite of the generally greater significance of the secondary effects of a research project, consideration of the secondary effects of most research projects cannot usefully be required in an EIS system. In most cases, such secondary effects will be the primary effects of actions distinctly different in character and in institutional responsibilities from the research project. The information that will actually be produced by a research project will generally differ substantially from that which is initially sought. To such an extent as the research information is critical to the planning of the

subsequent actions, it is generally futile to speculate as to the nature of the subsequent actions or their environmental effects until the research is completed. The impacts that may result from the use of information that may be produced unintentionally by research cannot be analyzed, of course, until the information has been produced.

In the case of an applied research project, there is an intended use or set of uses for the information to be produced. Even in the case of such a project, however, there are two limitations to the extent to which specific environmental assessment of the research project itself may usefully be required.

First, as noted previously, General Plans and amendments thereto, if proposed by a County, are excluded from the categories of action to which the EIS law applies (see discussion on action categories of concern). If the plans and amendments are excluded, it seems clear that research intended to provide bases for planning should be exempted from environmental assessment. The rationale is the same in both cases--that the plans, explanations of the plans, and preparations for the plans should inherently consider environmental impacts, and special documentation under the EIS system should not be necessary. By extension, the exemption should extend to research intended to provide bases for general planning by the State.

Second, except for general-plan adoptions and amendments, the subsequent "real world" actions that will use the information produced by a research project will, in general, themselves be subject to assessment procedures in the EIS system. In the assessment of such a subsequent action, account may be taken of all of the impacts, not merely those implied by a particular preceding research project, and the analysis of the impacts will not be subject to those uncertainties that the research will resolve.

Hence, there will very seldom be any advantage to the consideration, in connection with a research project, of those secondary impacts that will constitute the primary impacts of subsequent actions:

It is concluded that, in determining whether or not individual assessment need be made for University research project:

- a) only the primary effects of the undertaking of most research projects need be considered;
- b) an applied research project whose intent is the provision of information to be used in general plans should be exempted unless it will have significant primary effects;
- c) the primary impacts of a subsequent "real world" action that is intended to follow any other sort of applied research project, although they might be considered secondary effects of the research project, need not be taken into account unless there are inadequate mechanisms for assessment of the "real world" action;
- d) no account need be taken of those secondary effects that might arise as primary effects from the use of information that might be produced but cannot be predicted from the undertaking of a research project.

C. Dimensions of research

To further investigate the appropriate applicability of assessment requirements to research, dimension conventionally used the classification of research will be helpful--dimensions referring respectively to the intended anticipated utility of research results, the locus within which the research is performed, and the nature of the academic disciplines involved.

1. Intended utility

With respect to their intended utility, research projects are conventionally classified as basic (undertaken in order to produce information for its own sake), or applied (undertaken to produce information that will be put more or less directly to some specified use). The intent of research is not always easy to identify. Proposers of research often find it expedient to overstate the applicability of research in seeking its support. Nevertheless, it is convenient to distinguish the importance and amenability to analysis of the impacts associated with different parts of the spectrum of intended utility of research results. The EQC has, indeed, considered it appropriate to exempt research at the basic end of the spectrum from assessment requirements.

Conventionally, research at the other end of the spectrum is lumped as applied research, but in relation to environmental assessment needs it is convenient to distinguish what may be called practicability research (that which is intended to produce the final information needed to establish the practicality of a full scale operation of some kind) from what may be called utilitarian research (that which is intended to produce information that is needed but will not in itself be sufficient to determine full scale practicality).

There are no satisfactory means for forecasting what actions may result from information produced by a basic research project, one that is intended simply to answer questions as to the nature of some aspect of the universe. Hence, unless the research undertaking will itself have direct significant environmental impacts (primary impacts), there is no reason for the environmental assessment of basic research projects.

In the case of a utilitarian research project, one that is intended to provide answers to certain questions that are important to the successful undertaking of some particular subsequent "real world" action, the forecastability of environmental effects of the "real world" action may already be possible, may be among the objectives of the research project, or may require additional research. Clearly then, in the consideration in the EIS system, the assessment of secondary environmental impacts may be warranted in the case of some utilitarian research projects. However, for reasons indicated in the discussion of secondary effects, the primary effects of intended subsequent "real world" actions need be considered only if the intended subsequent action is not the adoption of amendment of a general plan and only if the subsequent actions will not themselves be assessed.

In the case of many practicability research projects, the major questions that need to be answered are economic ones, and the environmental impacts of the intended subsequent "real world" operations are forecastable before the practicability research is undertaken. However, the same limitation

on the need for consideration of secondary effects applies to practicability projects as to utilitarian projects.

Whether environmental impacts of an intended subsequent, full scale, "real world" action should be assessed as the secondary impacts to be anticipated from a utilitarian or practicability research project depends, however, on the adequacy with which these impacts will be assessed in connection with the undertaking of the "real world" action, as indicated in the discussion of secondary impacts.

In distinguishing between basic and utilitarian research in relation to environmental assessment needs, it would be well to discount claims as to the expected utility of research results made to justify support. Fortunately, the need for distinction will rarely arise.

The distinction between utilitarian and practicability research projects can best be made on the basis of the extent to which the research is intended to settle questions related to full scale "real world" undertaking. If no additional research will be necessary before a decision is made as to the full-scale operation, the project should be considered as practicability research. Otherwise it may be considered merely utilitarian.

2. Locus

In general, research requires the employment of means to control some independent variables so that the effects of other independent variables on dependent variables may be investigated. The means by which the controls are introduced vary with the locus of the research operation.

In office research, the controls are introduced mentally by the researchers. Office research projects employs writing and graphics media, and computational aids such as calculators and computers, but do not use elements of the physical, biological or social worlds other than the researchers themselves and the materials and energy used by the researchers or in the production, maintenance, and operation of their tools and offices.

Laboratory research involves actual manipulation of elements of the biological, physical, and social worlds, but these elements and their interactions are controlled by bringing them within the confines of a facility, the laboratory, whose primary function is to house the research.

Field research is not restricted to a facility whose primary function is to house the research. In such research, the controls result from selection and/or classification of elements, systems, or regions beyond the confines of a laboratory.

The office-laboratory-field classification of research is useful in distinguishing the extent to which assessment of primary environmental impacts are warranted. The primary impacts of office research projects are essentially identical to, and insignificant in magnitude as compared with, the impacts of office work in general, and clearly not worth assessment.

Laboratory work may involve significant industrial health hazards in the internal environment of the laboratory, but the external environment can be significantly affected only if the materials used in the laboratory are drawn from scarce resources or the discharges from the laboratory cause significant pollution. Needs for assessment of the primary environmental impacts of laboratory projects must be determined on the basis of the utilization of scarce materials or the discharge of harmful waste products.

Although many field research projects are intended to be essentially observational rather than manipulative, the means of observation may result in significant environmental impacts. For example, photographic recording of benthic marine biota may involve dragging a sled, on which the camera is mounted, along the bottom, resulting in damage to some of the organisms. Of an inquiry as to the attitudes of members of the community concerning an environmental problem may for the first time bring the problem to their attention and result in public action regarding it. Deliberate manipulation of the environment is, of course, even more likely to result in significant effects than observation. Hence field research projects are more likely to require EIS's than laboratory research projects. Field practicability studies, often referred to as demonstration projects, are most likely to have primary impacts warranting assessment.

3. Disciplines

Conventionally, the academic disciplines are divided among the areas of the physical and biological sciences, the social sciences, and the humanities. At best, the boundaries are not clear. The applied sciences, including agriculture, engineering, medicine, public health, and water resources generally overlap more than one of the areas. Further, research in one area is quite apt to result in actions that will be of significance in another. Potential primary environmental impacts may, however, be discussed to advantage in relation to this conventional classification.

For demonstration projects, most of which involve a combination of natural and social sciences, assessments should generally be required. Significant direct environmental impacts should also be anticipated for most natural science field work, that is field work employing the physical or biological sciences.

Social science field work may in a few cases have significant primary environmental effects on the social environment, and these are more likely to be subtle and difficult to evaluate than the environmental impact of natural science. However, neither laboratory nor office research in the social sciences is at all likely to have significant primary environmental impacts. Secondary impacts are of possible concern only in the case of highly applied or demonstration-type office and laboratory projects in the social sciences.

Significant direct environmental impacts may result from the supply materials or discharge of wastes from physical and biological laboratory projects, but not from social science laboratory projects.

D. Analytic summary

The results of the foregoing analysis of EIS impacts and types of research may be summarized in the form of indicators of the extent to which environmental assessment is warranted. These results are presented in matrix form in Table 1.

Although this table included indicators of assessment needs with respect to secondary impacts, the exclusion of feasibility and planning studies from the agency actions covered by the State EIS system indicates that the environmental concerns with the impacts of "real world" projects that may stem from research are generally to be addressed when the "real world" projects are to be undertaken, and not before the preceding feasibility studies, planning studies, or other necessary research is undertaken.

Table 1. Assessment need indicators*

<u>Application level</u>	<u>Locus of research</u>		
	<u>Office</u>	<u>Laboratory</u>	<u>Field</u>
Basic	(No needs)	(Physical & biological sciences)	(Natural science)
		i	I
Utilitarian	(Applied sciences)	(Applied physical & biological sciences)	(Applied natural science)
	ii	i, ii	I, ii
		(Applied social science)	(Applied social science)
		ii	ii
Practicability	(Economics & planning) II	(Engineering economics)	Demonstration
		i, II	I*, II

* Explanation of indicators of assessment needs. With respect to primary impacts: i = slight; I = moderate; I* = high. With respect to secondary impacts or institutional mechanisms for subsequent environmental assessment: ii = slight; II = moderate.

IV. DEVELOPMENT OF EIS SYSTEM FOR UNIVERSITY RESEARCH

A. Screening process expansion

The multiple screening process, prescribed in the EQC regulations and illustrated in Figure 1, must, of course, be applied by the University to its research program. Certain expansions in detail in the process seem clearly to the advantage of the University and in accord with the legal prescriptions and their intent. These expansions are discussed below and indicated in Figure 2, which illustrates only the part of the process between the EQC exemption class decisions and the final decisions on program and project undertakings.

1. Exemption classes and types

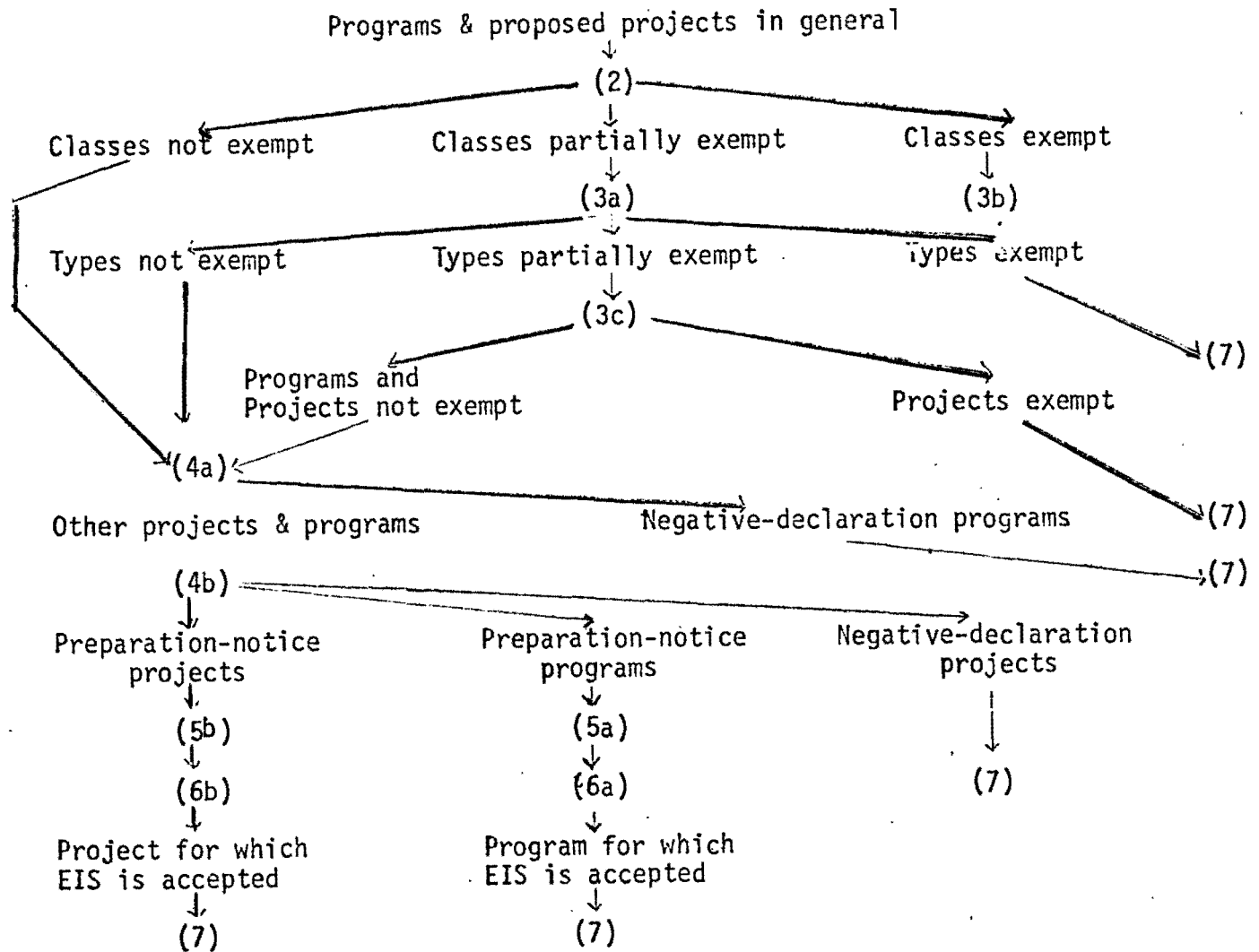
In Figure 1, the EQC decisions as to classes of action to be exempt from environmental assessment are illustrated as resulting in only two kinds of classes, those exempt and those not exempt. In actuality, the EQC found it necessary, or at least advantageous, to define several of the EQC classes as partially exempt and with some exceptions. For example, the EQC's research exemption (Class 5) applies to the class of basic data collection, research, etc., "except those actions that do not result in a serious or major disturbance to an environmental resource."

The University will probably find it necessary, or at least advantageous, to identify, within the EQC's exemption classes, some types of action that should be wholly exempt from EIS assessment, some that should partially be exempt, and some that should not be exempt. The agency decision-making step related to exemption types (step 3 in Figure 1) is therefore shown as three University-research-program substeps in Figure 2: (3a) deciding what types of research within a partially exempt EQC class should be wholly exempt, what types should be partially exempt, and what types should not be exempt; (3b) deciding what types of research fall within one of EQC's wholly exempt classes; and (3c) deciding what projects of a partially exempt type should be exempt and what projects should not. This subdivision of step 3 will be advantageous in that formal assessments will not need to be undertaken for any project that falls within a partially exempt type unless the University decides it should not be exempt.

2. Assessments of programs

The EQC regulations do not permit the exemption by an agency of any programs or projects that do not fall within one of the exemption classes defined by the EQC, and each action that is not exempt by type must be subject to an individual assessment. The EQC research exemption is restricted to basic research activities, and no applied research project can be exempted from individual exemption under this class. However, the requirement for individual assessment applies to actions, and actions are defined as including programs as well as projects. Hence, an entire research program may be subject to assessment, and if appropriate to a Negative Declaration determination, thus eliminating the necessity for individual assessments of the projects to be undertaken within that program.

Figure 2. Flow chart for major decisions in proposed EIS-system for University research



<u>Notes</u>	<u>Decisions</u>	<u>Institutions</u>
(2)	Exempt class decisions	EQC
(3a)	Decisions on types properly exempt within classes partially exempt	University
(3b)	Decisions on types exempt within wholly exempt classes	University
(3c)	Decisions on projects properly exempt within types partially exempt	University
(4a)	Assessments of programs eligible for negative declaration	University
(4b)	Assessment of other projects	University
(5a)	EIS Preparation, provision for review, and response of EIS's related to programs	University
(5b)	Preparation, provision for review, and response of EIS's related to projects	University
(6a)	EIS acceptance decision on a program	Governor
(6b)	EIS acceptance decision on a project	University
(7)	Decisions on project and program undertakings	University

Hence the assessment step (step 4 in Figure 1) is separated into two substeps in Figure 2: (4a) the assessment of those research programs that deserve Negative Declaration determinations, even though they do not fall within an exempt type; and (4b) the assessment of other projects and programs that are not exempt.

3. EIS's on programs

Just as there are advantages to subjecting an entire research program to a single assessment, it may in some cases be advantageous and appropriate, even if a program cannot be subject to Negative Declaration, to preparing and having reviewed and accepted an EIS on the entire program. Hence, in Figure 2, the possible results of the assessment step (4b) are shown including separately the identification of programs and of projects for which notices are issued; and separate EIS procedures are indicated for programs (steps 5a and 6a) and for projects (steps 5b and 6b).

B. Screening process use

1. Guidance from Research-Impact Associations

Guidance as to what kinds of research may be subject to exemption by type from environmental assessment, and what types may be subject to assessment by program rather than by individual projects, is readily provided from the summary of research and impact associations. The assessment need indicators shown in Table 1 in that summary were identified without regard to the EQC classification of actions as exempt or not exempt and without special regard to the exclusion of feasibility and planning studies from the categories of government actions covered by the EIS system. These provisions are taken into account in the suggestions for general treatment of types of University research in the EIS system in Table 2.

In this table, those office practicability studies that constitute feasibility and planning studies are shown as excluded, that is needing neither exemption nor assessment. However, laboratory practicability studies, a few of which might draw materials from scarce resources, are not indicated as excluded. Additionally, in the light of the exclusion, the concerns with secondary impacts that were indicated in Table 1 are not reflected in Table 2.

Even though the needs for assessment of a particular kind of research seem small, that kind cannot be designated as an exempt type unless it falls within the feasibility or planning studies exclusion or within one of the EQC exempt classes. In Table 2, the kinds of research suggested for exemption by type are limited to certain of those falling within EQC exemption Class 5, basic research activities. Kinds of research that appear to have little need for assessment but do not fall within EQC Class 5 are listed as probably subject to assessment and Negative Declaration by program. The remaining kinds of research are listed as probably subject to individual project assessments, although some of these kinds may be subject to program Preparation Notices and EIS's.

Table 2. General treatment of types of research in the EIS system

<u>Intent</u>	<u>Research Type</u>		<u>Treatment in EIS System</u>	<u>Exceptions o Special attent</u>
	<u>Discipline</u>	<u>Locus</u>		
Practicability	Economic & engineering feasibility	Office	0	None
Basic	All	Office	A	None
Basic	Physical & biological sciences	Laboratory	A	*
Basic	Social science & humanities	Laboratory & Field	A	None
Practicability	Engineering	Laboratory	A	*
Utilitarian	Sciences	Office	B	
Utilitarian	Physical & biological sciences	Laboratory	B	*
Utilitarian	Social science & humanities	Laboratory & Field	B	
Utilitarian	Natural sciences	Field	C	
Practicability	Demonstration	Field	C	#

Explanation:

Treatment: 0 = Excluded from system
A = Exemption by type
B = Negative declaration by program
C = Individual assessment

Exceptions or Special attention: # = Significant impacts especially likely.

Exceptions: * = Laboratory projects that may draw materials from scarce resources
or discharge harmful wastes

2. Identification of exempt types

With the possible exception of basic office research, it is expected that the identifications of research types in the University exemption list will have little superficial resemblance to the general types identified as exemptable in Table 2. Insofar as administratively recognized programs fall wholly or largely within a general exemptable type, it seems clearly expedient for the University to identify the programs as such in the exemption list, together with any necessary exceptions. Even if only a small part of a program falls within a general exemptable type, the identification of that part as a defined subdivision of the recognized program will be helpful, both in preparing the list and in identifying individual projects with the listed types.

3. Identification of Negative Declaration and single-EIS programs

Designations in terms of administratively recognized programs will be advantageous also in the cases of programs which are eligible in their entirety (or with few exceptions) for negative declarations, or may be covered by single EIS's.

C. Placement of responsibilities

1. Role of principal investigators and program directors

Because in its application to University research, the EIS system must relate to programs and projects, it is clear that the directors of programs and the principal investigator of projects should be involved in the development of the system. As those most familiar with the research to be undertaken, they should have the primary responsibilities for preparing assessment and EIS's when appropriate on their respective programs and projects.

In the case of a research project which has been identified, through the issuance of a Preparation Notice, as one for which an EIS must be prepared, the precedent seems already wisely established that the project Principal Investigator has the responsibility for preparing the EIS or having it prepared, in consultation with those interested. Principal Investigators should also have the responsibility for responding to review criticisms of the completed EIS, both through letters or memoranda to the critics and through revision or addition to the EIS.

It may be assumed that the personnel involved in University research programs have, in general, considerable concern for the environmental impacts of those programs. However, the concerns on the part of principal investigators and others who will benefit from the projects to get projects underway will to some extent offset their environmental concerns. It seems safe to assume that the time and effort required for the preparation and review of environmental assessments, and particularly the time and effort required for the preparation, review, and acceptance of EIS's, will seem onerous to the personnel of research projects and institutes. Hence, it seems best that responsibilities for decisions

as to exemption, determinations on assessment, and EIS acceptances should not rest with project personnel or program directors.

2. UH system administration role

At least the primary environmental impacts of major University actions, such as the establishment of new campuses, will clearly be greater than those of the University research program. However, considering the continuing changes of the research program, with the completion of old projects and the initiation of new ones, it seems probably that the number of EIS system decisions related to the research program will be at least as large as the number of such decisions for all other University programs.

It seems appropriate that some major decisions, such as the adoption of the University exemption list, should remain with the University system administration. The placement of other major decisions, such as the acceptance of EIS's is dictated by the EIS law or EQC regulations. However, it may be appropriate that some of the EIS-system decisions as they relate to the research program should be delegated to some specific unit within the University system.

3. Possible ORA role

The role of the Office of Research Administration with respect to the research programs of the University suggests that some of the responsibilities for developing and maintaining the EIS system as applied to these programs might appropriately be delegated to the ORA.

4. Possible Environmental Center role

The Environmental Center is available to assist in the review of research programs with the aim of determining types appropriate for exemption, programs wholly or partially appropriate for negative declaration, or EIS preparation by program rather than by individual project.

With respect to the assessment of programs or projects, the Environmental Center is available for advice on the adequacy of the assessments and on the determinations appropriately based on them.

With respect to EIS's, the Center is available for advice on topics that should be addressed, on disciplines that bear these topics, on members of the University with capabilities in these disciplines, and on the appropriate extent of analysis.

Because the Center reviews many final EIS's submitted in the State and Federal systems, and many assessments in the State system, the Center should not undertake to prepare either EIS's or assessments.

D. Recommendations

Assuming the general validity of the assumptions expressed in the

introduction of this report; assuming in particular the validity of the assumption that the University should serve as a model in the exercise of intelligent concern with the environmental impacts of its actions; and recognizing that the research programs of the University represent a very important part of its actions; a system must be established by which the University may most effectually exercise its concern in relation to the environmental impacts of its research programs. This report must fall short of defining such a system, but it is hoped it will be in the development of a system to implement the suggestions made.

1. Use of this report

It is recommended to the Environmental Center EIS Task Force that this report be forwarded, together with the Task Force's endorsement and any qualifications, through the Office of Research Administration and the Chancellor, U.H. Manoa to the President of the University for whatever guidance it provides toward the development of the needed system.

2. Placement of responsibilities

It is recommended that the University administration consider placement of responsibilities for developing the needed system in some specific unit or combination of units in consideration of the related roles of the Office of Research Administration, the Environmental Center, and other units. The Environmental Center is prepared with some suggestions as to the development of the needed system and its subsequent operation.